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THE VOICE OF COLORADO SCHOOL OF MINES, A SUPERIOR EDUCATION IN APPLIED SCIENCE AND ENGINEERING

Golden Woman Accused of Bomb Threats

Faisal Hashem

Renate Wichmann, who we reported on a few issues ago when her house burned, was arrested March 21 and charged with two counts of false reports of an explosive device.

The *Denver Post* stated she is

suspected of leaving bomb-threat notes at the Coors plant and the 16th Street Mall.

According to police, the notices said the bomb would go off if Commercial Federal Bank opened for business Jan 4.

When the bank opened and business went on as usual, police received a phone call saying a bomb at the Coors plant would be detonated if the bank did not close.

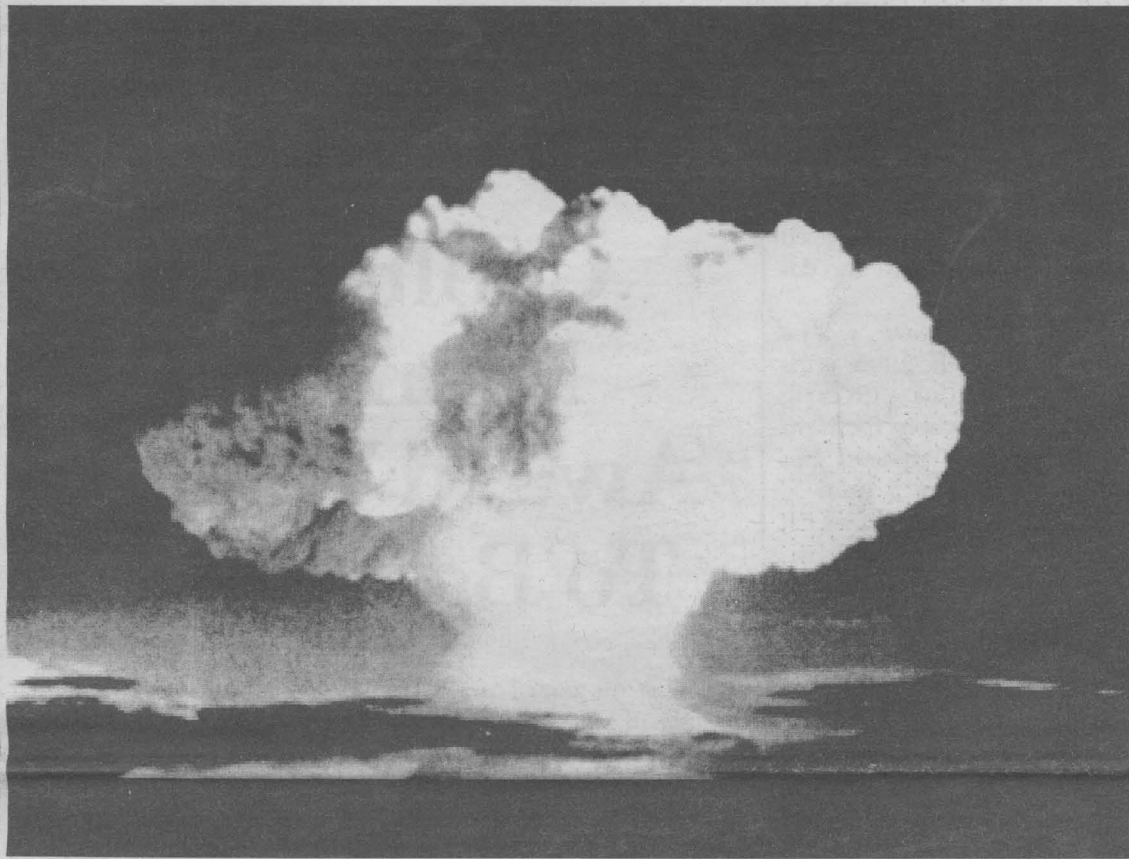
The call to police was re-

corded and reviewed by bank workers who said they recognized her voice. "She has a very distinctive voice," says City of Golden police spokesperson Julie Brooks.

Wichmann is a customer of

Commercial Federal and recently sold her coffee shop, the Golden Grind.

The case on her burned home is still under investigation, says City of Golden detective J. D. Kreutzer.



E-Days is coming... fireworks expected to close the annual event with a bang

Come Celebrate Earth Day

Hey Man, Recycle That Can!

Suzanne Smerjac

Did you ever wonder who is responsible for those bright yellow signs promoting the campus recycling program on trashcans?

Answer: The Earthworks Club.

Want to know what else we do? On April 21 we will sponsor a free concert in celebration of Earth Day.

The concert will be held Friday at 4 p.m. at the IM Fields. Refreshments include every Miner's favorite, beer, and for

the minors, soda.

Everything is free, so come out and party.

During this week Al Bartlett will speak in the student center about population growth and sustainability.

There is also a clean-up of the Tucker Gulch Trail planned for Friday, April 14.

For more information about any of these events e-mail us at earthworks@mines.edu, or come to a meeting Wednesdays at noon in Alderson 362.

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RV Park Explosion Damages 5 Vehicles

Faisal Hashem

An explosion at the RV park on 10th Street March 28 destroyed three trailers and two cars, according to police.

"The cause was a buildup of propane gas leaking from a pipe inside one of the trailers. A possible ignition source of the gas was the auto igniter in the heater inside the trailer," said Golden's

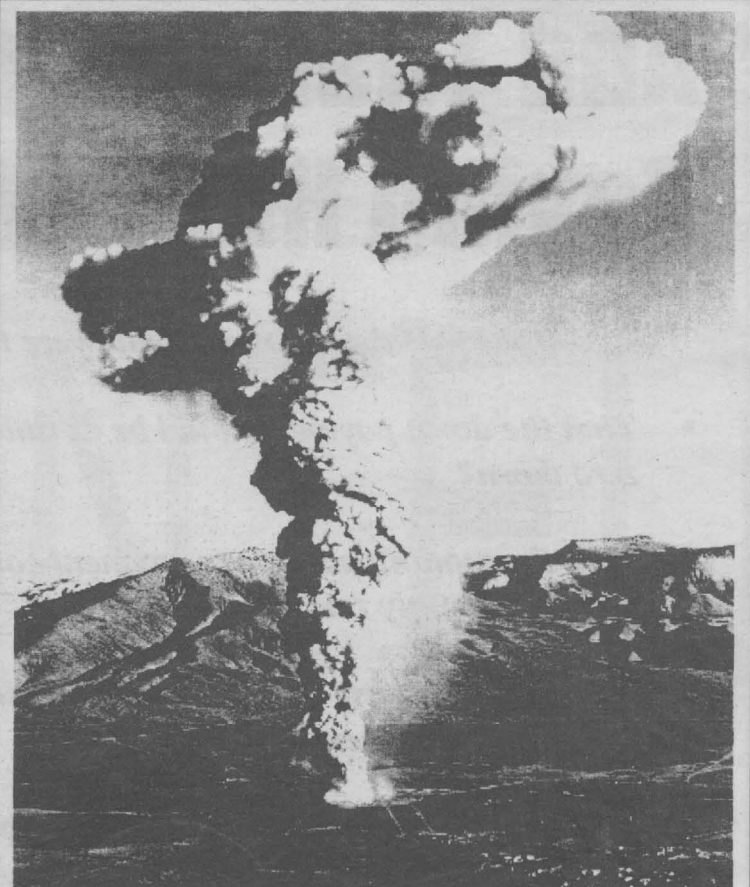
Fire Marshall Jerry Sticker.

No one was in the trailer home that was leveled by the blast, but the explosion slightly injured a man in a nearby trailer, blowing off one side of his home.

In addition, a firefighter was injured by smoke inhalation.

Kayak Race Comes to CSM

The CSM kayak club will host its second annual spring Ice Breaker Intercollegiate Kayak Race the weekend of April 22-23 at the Clear Creek Whitewater Park in Golden. For registration and information, contact J. Feucht at jfeucht@mines.edu. Major sponsors include MTI & Dagger Kayak, Spot Bar & Grill.



"Oops... wrong switch!"

Inside this
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LAIS To Offer IPE Master's

Tim Newlin

CSM's Division of Liberal Arts and International Studies now offers a "4-plus-1" year program under which students would earn both an undergraduate technical degree and a master's degree in International Political Economy (IPE) or International Political Economy of Resources (IPER).

For the time being, the student who completes the program will receive a graduate certificate. The degree program requires authorization of the State of Colorado and is still a few years away.

The IPE/IPER program will add broad knowledge of how the world is put together, how it works, and where it is going to the sound technical background Mines has become known for.

Part of the plan is to create an external advisory committee of representatives from industry and business to guide course offerings.

The group would be composed mainly of members with global business experience in the workplace, but will also include some members from academia.

"We want people from industry to have a lot of input; they

know best what the students should have to become successful international engineers and global businesspersons," explained LAIS professor Eul-Soo Pang, who is program coordinator.

Additional faculty will be brought in—academic IPE specialists, industrial and business leaders, and public policy makers—in part to add strength to specialized topics, to broaden the coverage of geographic areas, and also to diversify the department's course offerings.

Existing faculty already represent considerable expertise in the field—Arthur Sachs in global environmental politics, Hussein Amery in the Middle East and its water politics, Laura Pang in Latin-American development and hemispheric region-markets, Karen Wiley in environmental policy and water politics in NAFTA, and Pang in international political risk assessment and mitigation.

Five students are already enrolled in the nascent program which began last fall. For now the IPE/IPER Program will grant two 15-credit hour graduate certificates.

The IPE program will focus

on the understanding of general theories, models, and empirical data evaluation of the relationship between the state and the market; the second program will be a specialized component that will highlight the role of natural resources and the environment in the context of international and global political economy.

As the program builds momentum, LAIS will seek authorization from the Colorado Commission on Higher Education to award graduate degrees.

At that point, probably in 2003 or 2004, "graduates of the program can exchange their certificates for an IPE Master's," Pang said. From then on, the program will be fully developed and will simply award the degree directly.

Many of the courses will be offered online in the future as the program develops. Overall, there should be room for 10 to 15 total graduate students, per year.

Students can begin either fall or spring. LAIS has T.A. positions for financial assistance. Those interested in the program should contact Dr. Pang at 323 Stratton or ipe@mines.edu.

Three CSM Men Arrested

Faisal Hashem

Three Mines students were arrested recently for stealing construction equipment according to Golden police.

Michael Berry, 19, Christopher Neff, 19, and Tim Tickel, 20, were arrested and charged with 12 counts of felony burglary and theft each, said Julie Brooks, public information officer for the Golden police.

Feb. 18, Golden police department received a tip that a truck full of stolen construction equipment was leaving town for Chicago. Police say they found

one man at the truck and that he led them to the other two. The three men were booked at the Jefferson County jail and released on \$5,000 bond each.

Approximately \$65,000 worth of equipment was recovered from a storage unit and a 15-foot truck after a search was conducted, said Julie Brooks.

According to police, several burglaries and thefts occurred at construction sites in Golden, Wheatridge, Westminster and Adams County over a five-week period.

Coolbaugh Memorial Award Winner To Be Chosen

One of the annual Melville F. Coolbaugh Memorial Awards is given at least \$3,000 to an undergraduate upperclassman.

The 1999 Senior Award recipient was Amber Butler, who plans to graduate as a Chemical Engineer in May.

After graduation, she will fulfill her obligations to the U.S. Army.

Amber is from Brighton, Colo. She is a member of Tau Beta Pi, Blue Key, and the Society of American Military Engineers.

She is attending Mines on a Board of Trustees and Army ROTC scholarships.

To be selected, a student:

1. will graduate from CSM the year following the receipt of the award;
2. has a high academic scholarship record;

3. has financial need;

4. is reasonable active on and off campus, shows leadership qualities and shows evidence of respect from his or her peers;

5. concurrence of the dean of students that the student is qualified for the scholarship;

6. is a person whom the awards committee feels will make a positive contribution toward upholding the image and enhancing the reputation of the Colorado School of Mines.

The awards committee selects the recipient from a list of deserving students furnished by the financial aid office.

The Melville F. Coolbaugh committee will soon begin collecting information on prospective candidates for this year's award.

Your Landlord Says Hi, And Thanks Again For Paying His Mortgage!

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ATTENTION ALL ENGINEERING STUDENTS!

The pre-registration advising session for Electrical, Civil, Mechanical, and Environmental Science Specialties will be held Thursday, April 6th & Monday, April 10th 3-4:30 p.m. in Friedhoff Hall

Greek Women Stand Out Academically

Olivia Harren

The Panhellenic Council of the Colorado School of Mines would like to recognize the Greek women who academically excelled fall semester of 1999.

As stated in the Panhellenic creed, "We, as Undergraduate Members of women's fraternities, stand for good scholarship, for maintenance of fine standards, and for serving, to the best of our ability, our college community."

The following women stand out as academic role models in the Greek community:

3.0-3.499:

Beth Altberg
Stacey Axton
Erica Balstad
Abigail Bazin
Courtney Beard
Sabrina English
Sarah Ghiazza
Camille Gross-Rhode
Leah Hooten
April Hillman
Emily King
Karla Koop
Mary Larson
Cara Liverant

Jessica Lolley
Carrie Lyons
Michelle Manichanh
Brooke Mitchell
Traci Olson
Trisha Olson
Dewi Puspa
Jamie Stadtlander
Darcy Wardle
Rebekah Zeck

3.5-3.999 (Dean's List)

Lindley Barkley
Katrina Britton
Laura Brubaker

Tammy Foppe
Olivia Harren
Louise Jacobsen
Kimberly Kloppel
Stacey McEwen
Heidi Meyer
Suzanne Moore
Laura Nagle
Abigail Roulier
Kristi Wickman
Sara Williams
Valerie Zagnoli

4.0

Michelle West

Quantum Physics Lecture Coming Soon

A special lecture "Quantum Physics and the Spiritual Quest", will be presented Monday, April 10, at 7 p.m. in the Green Center, Petroleum Hall.

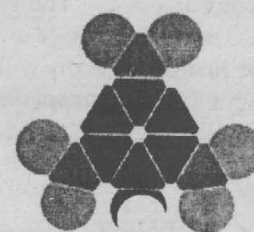
Dr. Lothar Schafer, professor of physics at the University of Arkansas, is the guest speaker.

The lecture will address the implications of quantum physics for the conflict between science and religion.

Quantum physics shows that reality is different than we always thought.

At the foundation of things we find entities that have mind-like properties, can exist in non-

material states extended in space, can act like they are in many places at the same time, and can influence each other instantaneously over long distances.



Dr. Schafer's talk is jointly sponsored by the ministry on science and theology at First Presbyterian Church of Golden and the Catholic

Newman Group on the CSM campus. The lecture is free and open to the public.

For more information, contact Frank Schowengerdt, (303) 384-2091 or e-mail at fschowen@mines.edu

The Gold Pan Legend: The Spirit Lives On

In the 1800s, mining could have been considered one of the purest forms of the "strongest survive" ideology.

In the quest to find the biggest and wealthiest claim, miners would often do everything within their physical ability to protect the wealth of their own find, or reap the benefits of the efforts of their peers.

The following is a story of an unusual claim, an unlikely miner and an act of overwhelming kindness.

The legend claims that in the late 1800s near the old Edgar Mine, a small town by the name of Lucas emerged as a result of the mining frenzy that took Colorado by storm during that period.

Though not very well known, Lucas quickly earned a reputation as being the "Miner's Graveyard" because all the good claims were difficult to get to, and many miners died attempting to get in and out.

Despite the dismal reputation, Lucas was much like any other mining town of its day.

In this town lived a woman we now call Ms. Amour, a recent widow of a Miner who died while trying to save his friend from drowning in a fierce river that raged near one of his claims.

It is not known why she stayed in Lucas, but a year after her husband's death she established a school house for the town of Lucas, offering her ser-

vices to educate the local Miners' children.

Since little respect was given to such ideas at the time, the only building the town would allow her to use was an abandoned tool shed on the outskirts of the ragged town, pressed up against the mountainside.

Ms. Amour taught with passion and kindness, inspiring her students to not only share her same passions, but to go out and find their own as well.

The miners were soon threatened by her outstanding success with their children and banded together to raid her battered shed of all her provisions. Undaunted by the unprovoked act of cruelty, Ms. Amour quickly replaced her lost items.

To protect herself from possible future raids, she began to dig a hole under the shed in which to hide her possessions. After several days of hard work, picking and shoveling, Ms. Amour happened upon a nugget of gold.

Upon careful inspection she found that an entire vein of gold ran under the shed. Months went by as she continued to secretly mine the underside of the shed at night, as well as teaching the children during the day. Soon she had accumulated more gold than had been found by the rest of Lucas' population combined.

Years passed and students had come and gone. Throughout all her years her rich find remained a secret.

Eventually, Ms. Amour became weak with age. However, before becoming confined to her bed, she sought out each of her past students and brought them each an equal portion of her wealth.

It was claimed that each portion was more than any person could have ever earned in a decade of hard work. Soon after distributing her entire treasure, she went back to her home in Lucas and passed away. The town of Lucas soon followed her.

Several years later at the turn of the century, in memory of their late teacher, Ms. Amour's students went to what used to be their old school house in the remains of the town they once called Lucas.

There they buried a golden pan made out of a small portion of the gold their teacher had given them. On the pan was inscribed "By Showing Others the Strength of Your Courage and the Will of Your Passion, Your Spirit Will Live On."

The Gold Pan Society has been established to unite the Colorado School of Mines alumni in a common goal to strive for and encourage others to let the passion and kindness that Ms. Amour so wonderfully exemplified live like a fire in the hearts of every person in every nation of the world.

The requested donation for each student is \$3 for a Gold Pan Key chain and to place their name in the Gold Pan Membership Ledger. The Ledger is displayed next to the President's Council Plaque along with the Gold Pan itself. The funds collected go toward a scholarship to an upcoming senior who displays characteristics in keeping with the legend.

Golden Pan Society Award

The Gold Pan Society Award was established by the Senior Class to reward a second-semester junior who best exemplifies a student with a passionate spirit. This cash award of \$500 will be presented to the recipient at the Senior Banquet on May 4, 2000 (the day before commencement).

Eligibility requirements:

1. Must be a Colorado School of Mines student
2. Must be planning to graduate from the Colorado School of Mines
3. Must be planning to attend Colorado School of Mines during the semester following the award.
4. Must have between 90 and 100 credits by the end of the semester the award is presented.

To apply:

Please write a response of 50 words or fewer to each question and submit to the Student Activities office by April 21st, 2000.

1. Describe the benefits of a Mines education as you see it from your experience.
2. Describe at least one aspect of a Mines education you would like to see improved.
3. Describe what role you want to play in your community as you establish yourself in a career that you have chosen.
4. Describe the organizations you enjoyed the most and explain why you were particularly fond of them.

Please call Laura Mesack with the Office of Institutional Advancement at (303) 273-3129 with any questions.

An Explosive Combination

Faisal Hashem

The newest craze on campus, soon to be the CSM Explosives Engineering Club, got off on a good start.

This fascinating mix of people with interests ranging from mining explosives to military demolitions to pyrotechnics to explosives synthesis, was all ears on the eve of their first lecture by Jack Bender, a CSM chemistry Ph.D. student. Bender spoke about explosives chemistry and answered numerous questions.

Bender received his BS degree from New Mexico Tech, which is located in the vicinity of several major explosives projects.

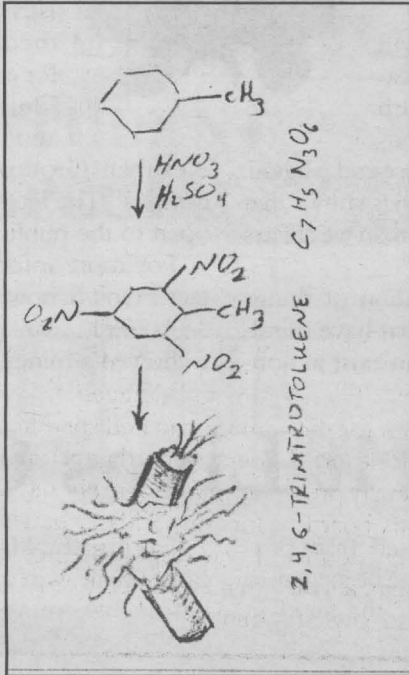
Dr. Bender discussed the classification of explosives: propellants vs. low explosives vs. high explosives. He spoke of the explosive firing train, how they are hooked up from initiator to detonator to booster to the main

charge. He covered manufacturing techniques and sources. He also explained the wave propagation principles associated with detonations and the proper use and selection of explosives for various applications.

The group is currently in the process of formalizing and soon will have its club profile mapped out. That is, who's who in politics.

The Explosives Club plans to create an explosives technology library and contacting explosives manufacturers and service companies for possible lectures, tours, and demonstrations. Hands-on training and experience is another possibility. Even thinking of certification training is being looked into.

Some of the founders of this imminent club are affiliated with the ISEE (International Society of Explosives Engineers). For information on the next lecture or to join the club, contact Jennifer Kramb, jkramb@mines.edu.



CSM AMBASSADORS

The Admissions Office is looking for outgoing students interested in becoming student Ambassadors.

RESPONSIBILITIES:

- ✓ Give campus tours to prospective students
- ✓ Assist with three campus visitation days per year
- ✓ Represent Mines in a positive, realistic light

WHAT YOU GET:

- ✓ A very flexible schedule
- ✓ An important role in the admissions process
- ✓ Money

INTERESTED?

- Contact Kristin Hill at
303.273.3229
khill@mines.edu

DATES:

- Applications due on
April 19th
- Interviews are the
week of April 24th

CSM Students Compete in Chemical Car Competition

Zach Dezman

Six CSM students participated in a regional competition against seven other colleges last Friday, testing their skills in car design and knowledge of chemical processes.

The constraints of the competition were to design a car the size of a shoebox that would go

from 50 to 100 meters under its own power carrying a payload of up to 500 mL of water and powered by a chemical process of the team's choice.

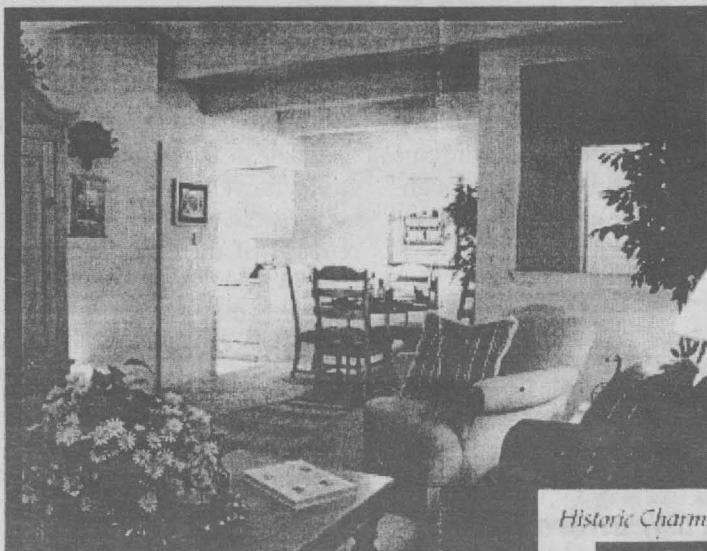
Our classmates' design was based on the gas expansion of acetylene caused when calcium carbide is immersed in water.

The pressurized gas expanded through a piston and cylinder system to drive the wheels.

After seven weeks of frantic work and preparation, the CSM team arrived at Salt Lake City, where they had a terrible realization: many of the other teams had months to prepare and test their cars.

One team's car was the brainchild of a senior design project with 10 team members.

One hour before the competition, the teams were told their



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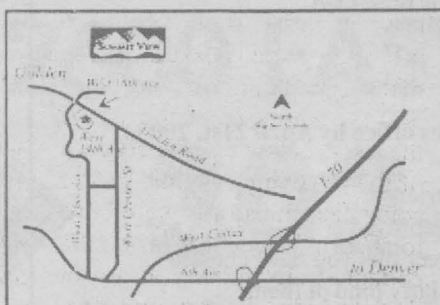
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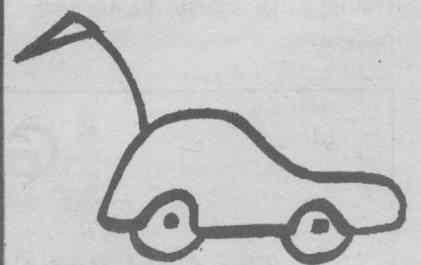


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target distance of 59 feet. Some schools' designs only went several feet, while one even exploded at the start line.

Miners car drove "straight as an arrow" for 40 feet. The winning car was designed by South Dakota School of Mines, coming within two feet of the target distance.

CSM team member David Schmidt believes his team's car has a solid design and given further testing and more time, it will be more competitive in the national competition this fall.

The team would like to thank Dr. Baldwin and the entire chemical engineering department for the opportunity to represent the school.

Almost Absolute Zero With Lasers

Agata Miodonski

"One day, there were two women walking in the forest," said Nobel laureate Dr. William D. Phillips, who spoke March 16 in the Lory Student Center at Colorado University on *Almost Absolute Zero: The Story of Laser Cooling and Trapping*. "They came upon a frog. The frog said, 'I'm not really a frog. I'm a prince. If you kiss me, I will turn back into a prince and I will be very grateful.' So one of the women picked up the frog and kissed it. Sure enough, it turned into a prince. The two of them split the prince's fortune and got married. A year later, the same two women were walking in the forest, and again, they came upon a frog. The frog said, 'I'm not really a frog. I'm a hairdresser. If you kiss me, I will turn back into a hairdresser and I will be very grateful.' So the other woman picked up the frog and kissed it. Sure enough, it turned into a hairdresser. 'I'm not very rich, but I will do your hair for the rest of your life,' said the hairdresser. And he did. After another year, these same two women were walking in the same forest, and once more, they came upon a frog. 'I'm not really a frog,' the frog said. 'I'm a physicist. If you kiss me, I will turn back into a physicist and I will be very grateful.' The first woman picked up the frog and put him in her pocket. 'Aren't you going to kiss it?' asked the first woman. 'Heck no!' she replied. 'A talking frog is worth way more than a physicist!'" With this joke, Phillips expressed his surprise at the large crowd that showed up to his lecture, which was aimed at a general audience of non-scientists, and yielded a large crowd. This lecture was part of the Frank L. Galeener Memorial Series.

Phillips graduated from Juniata College in Pennsylvania in 1970. He then received his doctorate in physics from MIT in 1976. Phillips has worked at the National Institute for Standards and Technology since 1978 and is presently NIST Fellow and leader of the Laser Cooling and Trapping Group. In 1997, Phillips, along with Steven Chu and Claude Cohen-Tannoudji, won the Nobel Prize in physics for developing ways to use laser light to cool gases to within a few thousandths of a degree of absolute zero and to keep the chilled atoms floating in different kinds of "atom traps." Their research has contributed to

knowledge about the interplay between light and matter.

The team that Phillips works with at NIST is composed of people from all over the world. The group is determined to develop ways to cool atoms to the absolute lowest temperatures possible. As physicists, they will settle for nothing short of the best, according to Phillips. The work being done is still unfolding. "The most exciting time for this subject is now!" Phillips asserted.

Phillips illustrated his lecture to make it clear to the non-scientist audience. Equipped with several containers of liquid nitrogen, Phillips referred to "the coldest temperature you have ever known." He blew up a balloon and carefully placed it into a styrofoam container full of liquid nitrogen. He then explained some concepts about liquid nitrogen that made the "magic" seem elementary.

Phillips poured liquid nitrogen onto the floor. Some of the liquid sloshed across the stage and then quickly evaporated. "It's just like pouring cool water on a hot surface. The water boils off," he explained. Since the liquid nitrogen, at about 77 Kelvin (K), is much colder than the floor (about 300 K), it boils upon contact with the surface.

During his lecture, Phillips kept blowing up balloons and placing them in the styrofoam container until he had five balloons in the container, which was

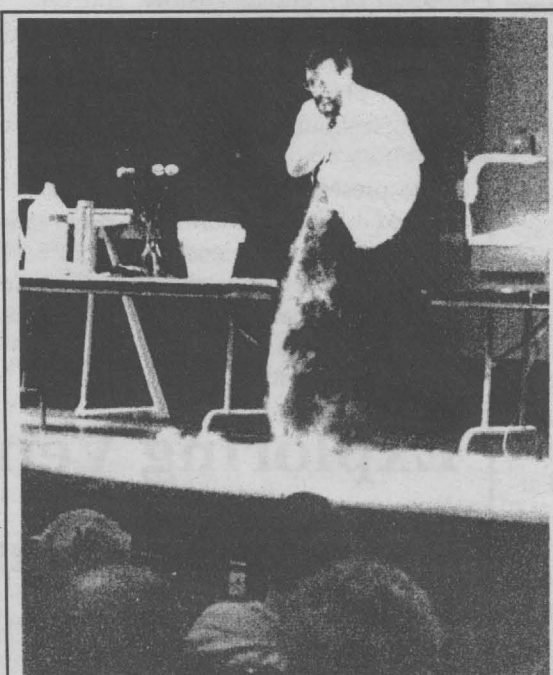


Photo by Richard Miodonski
Dr. Phillips pours liquid nitrogen onto the stage, demonstrating its physical properties

about the size of one inflated balloon. He then explained the concept. Since liquid nitrogen is so cold, it condenses the gas atoms in the balloon to a liquid, which takes up less room. Phillips then pulled the five balloons out of the container. Each of them looked "like a flattened

Boarder Queen Goes Solo at Big Mountain, Montana

Terra Rogers

AAA came to our rescue around 5 a.m. the next morning to pull Mitsy (the Mitsubishi) off a mound of ice that I had managed to high center her on the night before. The big sky state of Montana was our next conquest. Our second attempt to cross the border was relatively painless and we were on our way after a brief interrogation by the border patrol.

We arrived at Big Mountain Ski and Summer Resort around 10 a.m. and the minute I set my freshly waxed board on the crest of this massive winter playground, I regretted the hour I had lost. Here I found another deceiving inversion. Once above the thick gray layer, the sun beat down on my face and tempted me into removing some of the layers I had not removed since my last shower. It was difficult to re-

member that I was not the only one on the 3,000-acre mountain. The frosty, jagged summits of Glacier National Park were the only ones brave enough to peak over the inversion's swirls of silver lined clouds; it was captivat-



ing. I immediately met up with some locals that introduced me to some untouched and unforgettable back country. There honestly is "elbow room for the body and spirit" as the resort's brochure boasts. I generally prefer tree and back-country boarding, but I found at Big Mountain, the runs were designed in a way that I didn't dread any of

the time I spent on-piste. Not to say that their tree skiing is anything less than admirable. In only a couple of runs, I managed to find an area so demanding that even this invincible youth back tracked and searched for a less

intimidating drop. Big Mountain does not quit as early as the sunlight does by offering night skiing until 9 p.m. Wednesday through Friday. My guilty conscience had set in around 3:30 however, and I wasn't able to ex-

perience this. Amy was finally showing symptoms of the strep throat I had, so graciously, passed on, so I dragged myself off the mountain and spent the remainder of the day getting her prescription. I really did feel sorry for Amy, and maybe a little guilty. I was responsible for the illness that kept her from Big Mountain!

pancake." He threw the collapsed balloons into the audience and, as they reached room temperature, they began to re-inflate.

Phillips further demonstrated the super-cooling ability of liquid nitrogen by dipping a flexible rubber tube into it. After removing the tube, he tried to straighten it and it shattered, throwing pieces all over the stage.

The concept of "hot" and "cold," as explained by Phillips is that "hot" means fast-moving atoms, while "cold" means slow-moving atoms. The velocity of atoms moving in space was used as a comparison of the temperatures of the substances. For example, air atoms at room temperature have an average velocity of about 300 m/s. Liquid nitrogen, at a considerably lower temperature than the ambient air, has an average velocity of about 150 m/s. "But we, at NIST, were not about to be satisfied with 'half as fast' as air," he said.

What are the practical applications of the super-cooling ability of liquid nitrogen and the concept of cooling atoms to slow them down?

Phillips then explained how atomic clocks work. The atomic clock, Ramsey Method, uses cesium atoms, which are "nature's tiny clocks." Each cesium atom oscillates (ticks) at exactly the same rate, so they keep perfect time. Scientists wanted to develop atomic clocks, which they

would synchronize with the cesium clock.

First, the lab clock must be synchronized with the atomic clock, and then compared with the atomic clock to see what the error is. However, at a velocity of 200 m/s, over a distance of only one meter, the horizontal beam of cesium atoms is moving too fast to make an accurate comparison. Phillips related the concept to trying to read the time on a clock that "whizzes by you and then crashes into a wall—it's impossible." So, in order to make use of the beam of cesium atoms, they had to be slowed down so that it would take longer to travel the one meter. This way, it would be possible to compare the time on the lab clock with that of the atomic clock.

Using the concepts of the pressure of light, resonance, and the Doppler shift, in 1985 Phillips' team began to uncover the secret of using lasers to cool atoms. The Doppler shift works such that atoms notice very small shifts in the color of lasers. When they are moving toward the laser, it looks slightly bluer; when they are moving away from the laser, it looks slightly redder. NIST developed a process, such that several lasers are placed in a 3-D configuration, with each of them having a slightly redder color than the atoms would like to absorb. The atoms inside the container are moving in a random fashion. As they move toward a laser, the light appears slightly bluer than it actually is. Since the lasers are actually a little

redder than necessary, with the Doppler shift, the atoms interpret the right frequency and absorb the laser light. In this way, all the atoms are slowed down at a central point where the lasers intersect. At this point, a cold ball of atoms aggregates, a process termed "optical molasses."

In addition to this "optical molasses" process, another process takes place called "photon absorption and emission." The gist of this process is that the random movement of the atoms, resulting from photon absorption and emission that causes the atom to move from ground state to an excited state, causes heating. The heat generated from photon absorption and emission, combined with the cooling produced by the Doppler shift and low resonance lasers, yields an equilibrium temperature for the substance. This temperature for sodium was calculated at 240 mK - 240 millionths of one Kelvin. The average velocity of the sodium atoms was calculated at only 30 cm/s.

After hypothetically attaining such a low temperature, Phillips' NIST team needed a way to trap these super-cooled atoms. The solution was magnetic fields. Phillips demonstrated this method using small magnets. He asked the audience to remember how, when they were children, they used to play with magnets. If you hold them the right way, the magnets repel each other. "Remember how you used to try to float one magnet on another one?" Phillips asked.

Continued on page 6...

"Absolute Zero" from page 5

Oil: The Geyser That Changed Our World

Faisal Hashem

"It never worked because the magnet would always flip over and then stick to the other one." Phillips then demonstrated the "magic trick" by attaching the magnet to a top, and then spinning it over a magnetic board. As the magnetic top floated, spinning in mid-air, Phillips explained that atoms are just "tiny magnets." This same method had to be somehow applied to the super-cooled mass of atoms.

Using a crosshatch pattern of lasers, the NIST scientists were able to capture the ball of atoms, 1 cm in diameter. They then developed a method called "load, release, recapture," for measuring the temperature of the ball of atoms. Using this method, they calculated the temperature to be 240 mK—exactly the same temperature they had calculated in the hypothetical stages of the experiment.

NIST continued to experiment with the super-cooled atoms and developed a new method of measuring the temperature called "time of flight." They measured the temperature to be a lot lower than 240 mK. Doubtful of their findings, NIST developed two more methods for determining the temperature. After confirming their findings, NIST announced they had attained temperatures even lower than they originally expected. The scientific community was reluctant to accept this amazing discovery. However, after proving their methods, NIST showed that cooling by lasers had allowed them to bring atoms to the amazingly low temperature of 40 mK.

French scientists repeated NIST's experiments in 1995 and came to the same conclusion. They termed the phenomenon "Sisyphus cooling" after the Greek mythical character Sisyphus, who was condemned to roll a stone up a hill for eternity. In Sisyphus cooling, as an atom emits a photon, it drops back to its ground state so that it is "always climbing up hills" losing energy and slowing down. Combined with the equilibrium temperature—from the Doppler shift and low resonance lasers, along with photon absorption and emission—the result was an

In the year 1901, an oil well gushed up near Beaumont, Texas. It was called the Spindletop well. The 150 foot high plume shot up untamed for nine days, beginning one of Texas's largest oil booms. The age of oil was born and Texas was instantly changed from a farm state to a petroleum juggernaut. Long before the Spindletop there was oil production in Lufkin, Nacagdoches, and Corsicana Texas. But nobody had ever seen production like the Spindletop.

"You get one gusher and everyone thinks it's a freak. Then you get five more gushers all in a row...and so much oil was being produced that it outdid the

rest of the world. Hell, you have to figure out what to do with all of this oil," said JoAnn Stiles, associate professor of history at Lamar University. Lubricating oil and lantern kerosene were the uses for oil in 1901. The Spindletop oil was too high a quality for these purposes and better suited as a fuel. So railroad trains started to change over from coal to oil and as the cars industry grew it began to demand more and more gasoline, which was originally an undesirable side product that was burned off or discarded in the Gulf of Mexico.

Now spectators came from all over to see this gusher. Businessmen too. Within a year there

were over 500 new companies formed in Beaumont. Most are gone now, but not Texaco, Gulf, Mobile, or Exxon. Soon other fields were discovered throughout Texas and up and down the Gulf. One Houston reporter, Marcellus Foster, invested \$30 on an oil well option and sold it after one week for \$5000. He later went back to Houston and along with some other investors formed the Houston Chronicle. "Although it was not apparent at the time, petroleum was destined to provide the energy throughout the 20th century — a century where economics, politics, and wars have been shaped by oil. Spindletop was the catalyst that ushered in the new

world based on oil," said Ryan Smith, the Spindletop 2001 commissioner.

Who could have guessed that from a hole in the ground a century ago, all of industry and every part of our lives would become so dependent upon oil. From "crude arithmetic" to OPEC politics, everyone in the world is now spending time and energy calculating and engineering our future based on this crude.

What's next? Polymers or ceramics perhaps. Sure, there are new materials and technologies being developed, mostly to support other fields such as transportation. But what's next in fuel? Oil...still.

even colder ball of atoms than the scientists had expected.

NIST was eventually able to cool atoms to a temperature of 700 nK—700 trillionths of one Kelvin. "This is 100 million times colder than liquid nitrogen," Phillips said. Again, he poured liquid nitrogen onto the stage. The average velocity of the atoms in this 700 nK atmosphere was only 7 mm/s.

Finally satisfied with their closeness to absolute zero, NIST returned to the idea of the atomic clock. They shot the super-cooled cesium atoms (700 nK) across in a beam, prepared to compare the time on this clock to their lab clock one meter from the starting point. To their dismay, a velocity of only 7 mm/s was much too slow to make it to the other clock. "We shot the atoms across and they fell like rocks," admitted Phillips.

NIST then decided to use an idea developed in 1953 by Zacharius. This scientist had imagined an "atomic fountain" but didn't have the super-cooled atoms to implement the idea. This atomic fountain was based

on the same principle as the beams that NIST had been trying to use, but instead of shooting them in a horizontal beam, they would be tossed up and

would then fall down. Combining their 700 nK cesium atoms with the atomic fountain idea, NIST was finally able to develop an atomic clock, one meter in height, that only gains or loses one second every 20 million years.

Since developing the atomic clock, NIST has been able to use evaporative cooling to bring the temperature of a mass of atoms down to 1 nK. Now, NIST is working with Bose-Einstein Condensation (BEC). This theory, developed in 1924, would allow scientists to cool atoms 100 times closer to absolute zero.

How much closer can scientists get to absolute zero? With the use of lasers, atoms cannot be cooled any lower than they already have been. Phillips explained why absolute zero is the very lowest temperature they could ever attain. Negative temperatures on the Kelvin scale can't be reached because, according to the definition of the scale, movement stops at absolute zero, and "you can't be slower than stopped!"

The future for laser cooling and trapping of atoms looks bright. Phillips mentioned some of the current uses for cold atoms. GPS systems would be much more accurate with an atomic clock. Scientists could develop gravimeters and more accurate gyroscopes with the use of cold atoms. Optical tweezers are already making use of super-cooled atoms. These optical tweezers are allowing biomedical scientists to study viruses as they attach to cells, and perhaps they will soon find ways to prevent diseases. Cold atom clocks in space, according to theory, would be even more accurate than on Earth. NASA has already arranged to send a cold atom clock into space in 2005. New uses for cold atoms are constantly being developed.

Colorado Mountain Club

Table Mountain

Lecture and Reception

PRESENTED BY DR. ROBERT RAYNALDS AND
DR. PETER MODRESKI

Friday, April 7 at 7 p.m.

Two prolific and historical landmarks of Golden--North and South Table Mountains--will be featured in a free public presentation in Foss Auditorium of the American Mountaineering Center in Golden. Dr. Robert Raynalds, research assistant at the Denver Museum of Natural History, and Dr. Peter Modreski, geologist for the U.S Geological Survey, will share insight into how the Table Mountains were formed, as well as their mineral and fossil components. Their interpretive discussion will include compelling information about the importance of preserving these beautiful mesas.

The presentation is co-sponsored by the Colorado Mountain Club and the Table Mountains Conservation Fund. The two groups will host an informal reception from 6-7 p.m. prior to the presentation, with information about local conservation activities that need citizen involvement. Donations will be taken for the Table Mountain Conservation Fund.

Exploring Venezuela's Backcountry

PRESENTED BY STEVE PAULICK

Thursday, April 13 at 7:30 p.m.

Venezuela is one of the most diverse places on earth. There are majestic Andes peaks more than 16,500 feet high, clear Caribbean seas with live reefs, rain forests and deserts. The flat grasslands teem with birds and wildlife much like the Serengeti of Africa. Huge tepuis (flat-topped mountains) rise from the Amazon and Orinoco rain forests. Here is the tallest waterfall in the world at 3,200 feet, Angel Falls. This presentation will feature the wilderness and the native cultures of Venezuela that few tourists see.

Free and open to the public. Colorado Mountain Club, 710 10th Street, Suite 200, Golden. For additional information please call 303-279-3080

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What's On This Weekend ...

IT'S E-DAYS!!!! PARTY!!!!

Around Town

- *Phantom of the Music Hall* (Heritage Square Music Hall)
- Bob Dylan (Fillmore Auditorium: Apr. 6, 7:30 pm)
- Gallagher (Paramount Theatre: Apr. 8, 8 pm)
- Sleeping Beauty Ballet (Mackay Auditorium: Apr. 7&8, 7 pm; Apr. 9, 2 pm)

Opening on the Big Screen

- *Black and White* (Robert Downey Jr., Brooke Shields, Ben Stiller, Mike Tyson)
- *Return to Me* (David Duchovny, Minnie Driver, David Alan Grier, James Belushi)
- *Rules of Engagement* (Tommy Lee Jones, Samuel L. Jackson, Ben Kingsley)
- *Joe Gould's Secret* (Ian Holm, Stanley Tucci, Steve Martin, Susan Sarandon)

At the Denver Performing Arts Complex

- Colorado Symphony: Faure, Ravel, and Respighi (Boettcher)
- *The Cripple of Inishmaan* (Space Theatre)
- *Side Man* (Stage Theatre)

What's On Next Weekend ...

FAC

- Comedian Jon Reep (I-Club: 5 pm)

Around Town

- *Phantom of the Music Hall* (Heritage Square Music Hall)

Opening on the Big Screen

- *Keeping the Faith* (Ed Norton, Ben Stiller, Jenna Elfman)
- *Where the Money Is* (Paul Newman, Linda Fiorentino, Dermot Mulroney)
- *28 Days* (Sandra Bullock)
- *American Psycho* (Christian Bale, Willem Dafoe, Chloe Sevigny)

At the Denver Performing Arts Complex

- Colorado Symphony: Gilbert and Sullivan's *Yeoman of the Guard* (Boettcher Hall)
- *The Cripple of Inishmaan* (Space Theatre)
- *Side Man* (Stage Theatre)

Zookeepers Keep the Laughs Rolling

Brett Maughan

One would think that, after a last minute cancellation by a drummer, a couple of ailing belts in an RV, four gigs in NV, UT, CO, and KS in four days, a Mines audience of roughly a dozen stressed-out engineering students, and a mysterious funk to close the gig, that the L.A. based "Folkadelic Party Rock" band named The Zookeepers would be eager to forget the tour that led them to the quiet suburb of Golden. In fact, according to the most recent entry in the "Road Stories" section of their website, The Zookeepers found their Mines experience "hysterical."

With Patrick Vernon on lead vocals, guitar, and harmonica, Albie Dunbar on bass guitar and backing vocals, and ex-drummer Shannon covering for the aforementioned cancellation, they have been compared to such performers as Dave Matthews Band, Blues Traveler, and the Grateful Dead. Their intellectual humor permeates through their upbeat music, with songs lyrics ranging from "Space Mountain's crack house..." and "...Little Mermaid has implants," to "I am an existential cow..."

The handful of us that were around when the gig began in

the I-Clubtwo Friday afternoons ago received a treat, a concert and a comedy show in one. The band let us in on many inside jokes and the often-twisted decision-making process that occurs during the evolution of a music set. The final number of the night stopped and restarted at least half a dozen times, due to some odd "happy notes" and a funk that manifested on stage and drifted into the crowd. Both the band and the audience were practically rolling on the floor in tears, from laughter.

If any of you ever have the chance to catch a Zookeepers show don't pass it by. They are entertaining, intelligent, and infectious, and a testament to the ability of MAC to find good bands with minimal budget. It gives one hope for the Stroke 9 concert this weekend. With a total budget for E-Days of around \$48K, almost a third of which goes to the fireworks show, many popular bands the CSM community requests are out of MAC's league, not to mention poorly suited for a venue as small as our campus. However, MAC consistently manages to select quality smaller bands for their events. They deserve some credit where credit is due.

Diversions to Pass the Time on E-Days...

Brett Maughan

I have no real movie review for you this week. Instead, I will make some recommendations for movies, either to rent or see on the big screen, to pass the hours while your drunken stupors and consequent hangovers wear off this E-Days.

Naturally, the classic drinking film of all time would have to be *Strange Brew*. If you haven't yet watched this masterpiece, now is your chance. Having the room spinning and seeing two TV sets instead of one makes the whole experience even more fascinating.

I recently discovered that a film currently on the big screen, *Final Destination*, would be best viewed while severely alcoholically impaired. Regardless of your mental state, this horror flick

is a laugh riot in a gruesome, morbid sort of way. However, I suggest finding a way to get in free. And bring a flask or two.

If you are in the market for a more creatively modified weekend, allow me to suggest a little film by Monty Python player Terry Gilliam called *The Adventures of Baron Munchausen*. This fantasy romp features John Neville, Eric Idle (also of Monty Python fame), Oliver Reed, a young and gorgeous Uma Thurman (before the drugs caught up to her), and a couple of special guest appearances by Robin Williams and Sting. The film recently played at the Mayan for one weekend only, but you can still catch it on video.

Finally, to enhance your E-Days celebrations with cinematic gusto, check out the TV/Movie Drinking Games at www.barmeister.com. They have rules for games to the tune of such great films and television shows as *Star Wars*, *Top Gun*, *Little Mermaid*, *Pulp Fiction*, *Braveheart*, *Groundhog's Day*, *The X-Files*, *South Park*, *The Simpsons*, and many, many more.

I hope everyone has a fun and safe E-Days and, no matter what, be conscious for the fireworks show!

Beyond Mines

Talliana Dueño

UGLY BITE-ME LETTER # 4 *

November 19, 1999

Mr. Mark Blanc
1221 Sesame Street #3
Golden, CO 80401

Dear Mark,

Thank you for interviewing with MegaCORP during our last visit to the Colorado School of Mines campus. At this time we have no openings that match your skills, but please let your friends know that we are still looking for applicants with a higher GPA,



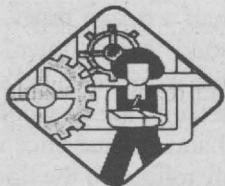
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Summer Orientation Leaders

The office of Student Activities is now accepting applications for Orientation Leaders

We are looking for students who have been active in the total Mines experience.

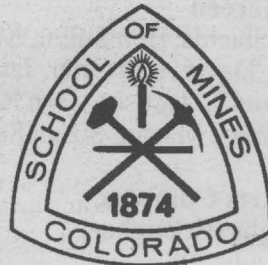
Applications are available in the Student Activities Office, and are due back by April 14.



Explore CSM will take place between July 14 & July 24

The Oredigger

THE VOICE OF COLORADO SCHOOL OF MINES, A SUPERIOR EDUCATION IN APPLIED SCIENCE AND ENGINEERING



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Letter to the Editor

Response to the *Earth Raper*

Students' Perspective on a Little Satire

I was surprised when I read last week's edition of "The Oredigger," especially the article that was written about the football team and the head coach. Despite the fact the spring practice for football has barely started, you are already referring to our new head coach Bob Stitt as coach "Stiff." To me, a few months in the off season is hardly adequate time to be already smiting our new coach, especially in our school newspaper.

The rest of the article is also over the edge. I know our team did not perform well last season; however, the contents of the article would be better suited for an edition of "Tailings" than

"The Oredigger." The next time you decide to criticize the football team, any other sport, or any other organization on campus have some class.

I know last year we had to fire the entire staff of the newspaper because articles like this were being written and published. I thought that last semester John McLaughlin was doing an excellent job as the editor-in-chief and "The Oredigger" greatly improved. Unfortunately, he's not here this semester. Please do not let the newspaper fall to pieces again.

Ryan Countryman
Varsity Football Player
Sophomore Class President

Letter to the Editor

During my tenure at Mines, I have noticed that the majority of the student body maintains a serious attitude regarding their studies. While this is healthy, I have also observed that many of these students retain that attitude no matter what situation they are in. Reading "The Earth Raper" was pleasing because I was reminded that there are still a few students at this school who can sit back and laugh at themselves.

The unfortunate reality is that some students probably found little or no humor in "The Earth Raper." Some students get so wrapped up in their little "Mines world" that they deny themselves the ability to see how amusing we really are.

For example, I'm sure that some football players got a burning case of jock itch from reading the article that satirized

the CSM football team. The reality is that we are a predominantly academic school and that we place our education ahead of our games. The results of this include job offers with high salaries and a football team that does not always perform as well as we would like. This is not necessarily a bad thing.

If anybody was offended by any of the articles in "The Earth Raper," I suggest that you lighten up and learn to laugh things off. Or, you could continue through life wasting time getting angry at well-intentioned humor while others continue through life laughing at you. Either way, I would like to thank the editors for publishing "The Earth Raper."

Ben Ploeger
Presspectator Staff
Sophomore

Editor's Note

The *Earth Raper* is a Mines tradition dating from the early 1970's. Normally the edition is a spring publication written before E-Days with various purposes: to satirize the school and its organizations, to give the staff and students a chance to have some fun and relax, and as a preface to E-Days. It was discontinued in recent years due to trouble keeping the paper running at all, cautiousness on the part of editors new to their jobs, and forgetfulness of tradition.

We decided to revive this old tradition because it seemed like a fun way to begin the end of the year. We apologize to those offended and hope perhaps next time, the articles will be taken in the light-hearted nature in which they were intended.

Erin Kock and Lianne Hill

Running From a Pikachu on April Fool's Day

Would you agree that April 1st is as good a day for trouble as any? Many must learn that the key to playing a good prank is the ability to take a prank in return.

"A good name is rather to be chosen than great riches and loving favor rather than silver and gold" (Proverbs 22-1), but not on April Fool's day. From snow sculptures on car hoods to the chirping of crickets when the room door opens, on April Fool's, a good prank is rather to be chosen.

It was getting late and a friend, White, and I were on our way to pick up and deliver an April Fool's package when we spotted Mines police at our suite door. We knew what had happened: it was the missing Pikachu.

A peculiar type of person—we'll call her Sleepy—floats around our dorm harassing anyone she comes across during her sleepwalking excursions. Earlier that week, Sleepy had come into our dorm while White and I played with a pair of handcuffs

(no, nothing kinky). Most everyone in our dorm, including Sleepy, had played "escape artist" many times this semester and faster escape times were becoming a prize.

The evening in question, Sleepy had trouble getting our attention, so she stretched out her hand to be cuffed. White naturally obliged and attached the other cuff to a railing. She seemed just as fine as all the other times we did it to her and she did it to us. And per usual, someone soon brought her a safety pin and in no time she was free to roam and babble and was back in our suite. Eventually, White inquired of his party toy and was informed she "no longer had the handcuffs."

A few days went by and a hint was offered here and there that enough was enough and it was time to return White's cuffs. After all, April 1 was approaching and a party was planned.

April Fool's day arrived and I was in her suite early that morning visiting another inhabitant when I spied her door wide

open. She was out, busily harassing those in my suite, possibly in my room. I had heard through my spies that my gift for April Fool's was to be a "package" of 100 happily chirping crickets. Thinking of the party scheduled for later that night and considering the eminent need for White's handcuffs, I stepped into her room and removed her phone battery as a prank, with an added benefit...collateral. Later when her phone rang she would pick it up and say "hello, hello..." and I would say "April Fool's."

Earlier that morning I had taped a couple of people's hook-switches down so that when they picked up their phone handset, it kept ringing while they said "hello, hello" and I said "ha, ha April Fool's." Everyone laughed and committed the prank to memory for future reference.

I hid Sleepy's battery in the bathroom. Upon her return she was not as impressed with my prank as I was and had a rather loud breakdown. Red in the

face, with fists clenched and feet stomping she aimed her mouth at my ear and blew up. At that point, I surreptitiously took a deep breath and calmly said that I "no longer had the battery." She stomped off and returned within the hour, grinning from ear to ear, parading a new phone in a shopping bag. She was fine again and told me she had needed a new phone anyway.

A few hours went by and I was visiting another friend in a different suite when Sleepy stormed in and explosively proclaimed that I had better give back her yellow Pikachu or else. I told her I didn't have it and added, "You probably misplaced it." I then explained the motive behind the battery prank, reminded her of my original wish to trade the battery for the cuffs, and promised her that I did not have a clue as to the whereabouts of her Pikachu.

Now, the cops are at our door. Sleepy had called them over her missing Pikachu. I could hardly believe Sleepy would complain to the authorities about

the same type of mischief she does herself. Some people get attention by becoming hysterical. Earlier this semester after several attempts at reason, one such Sleepy had to be physically dragged out of another person's dorm room.

That April Fool's day, Mines police did their jobs well. As Chief Boyd puts it "the college experience" can go on. One officer admonished us with a recital of the state's long list of possibly obligatory options should we burgle. The other, who perpetually smiles—a key to interrogation—kept the situation moving along smoothly.

We shook hands with the officers and explained we had to run along now. We had a "package" of crickets to deliver.

Fun is fun and mischief, done with care, can be fun too. I enjoy being on the receiving end of a good prank as much as I like being on the giving end. If you do a prank, you ought to be able to take one as well.

Faisal Hashem

Introduction

Questions abound in the public mind about legalization of marijuana for medicinal use. The health risks as well as the potential proliferation of addiction are often cited as reasons to continue our present course of marijuana being illegal.

Legalization of Marijuana

Con Legalization

Many proponents of legalizing marijuana cite its medicinal purposes as justification. However, they usually forget something. Not only are there other more effective painkillers, there actually is no reason anyone needs to smoke marijuana to receive the medicinal benefits. Marijuana's active ingredient, THC (delta-9-TetraHydroCannabinol), could easily be extracted and taken in pill form. But that wouldn't be fun now, would it? None of the psychedelic colors would fly around; we wouldn't be getting the full pleasu.... I mean medicinal benefits of marijuana. Are there any benefits at all? Not according to Dr. Leuchtenberger who says that marijuana smoke is more damaging to the lungs than cigarette smoke. Marijuana smoking impairs the body's natural defense system, brain damage, reduces coordination,

lowers sexual activity and pleasure eventually resulting in impotence (you know, doesn't go up) in chronic users, and finally it has been found to cause lung cancer. The following information can be found in the book, *The Real Marijuana Danger* by Malcolm E. Smith.

Let's be frank, the only reason we want it legalized is so that it'll be just that much harder to arrest someone getting high on pot. This brings me to the underlying question: Why do so many people wish to escape reality by using marijuana? If you ever wondered what the difference between our generation and previous generations is, it is simply this: We escape reality with our minds more than they ever did. Whether it's marijuana, watching too much TV, surfing the net, or listening to music incessantly, we all escape a portion

of reality daily and sometimes spend entire days making sure we hardly have a real experience. Why do we do it?

Have you ever been out in the open, away from the city up on a mountain or out in a field and just stood still and pondered for a moment? Have you ever pondered the source of your existence? You may find it's a lot harder out there in the field or on the mountain. Somehow, random chance just does not explain the beauty you observe all around you. Why is this? It's because nature is true reality, the natural creation and not the man-made one we live in every day. Perhaps what we really need to do is escape our escapism by returning to reality and not legalizing another more comprehensive form of escapism.

James Oltmans

Introduction

Colorado Institute of Technology

This week there are two point-counterpoint sets. The establishment of a "MIT of the west," also known as the Colorado Institute of Technology (CIT) has stirred a heated debate at the Colorado School of Mines. The new institute may increase competition for funding currently going to CSM. The debates mostly discuss the funding of the new college and whether this will detract from the support already given to the established state-supported universities, including CU, CSU, and CSM. The reasons for and against the establishment of another university in Colorado, especially one based on technology, are extensive.

The state of Colorado absolutely should try to implement an institution that will be a leader in technological education. The economy of Colorado is currently growing at an incredible rate. A huge amount of that growth is in technology-related business. Part of the goal of creating this institution is to help supply the workforce with qualified individuals. The issue is simple. There is a great demand for the technical majors and this new institution will supply it. The school will help support Colorado's economy while giving students from Colorado and the rest of the world a chance to study at one of the premier schools in the world.

A large amount of the money will come from industry, so there will not be any strain on other Colorado schools' resources. Additionally the economic boost that this school will spur will, more than likely, sup-

port it and other institutions including Mines.

The best way to attract the most promising young minds to our state is with a school that promises a great education and reputation. The reputation will not be hard to come by because of the support of all of the major supporting companies. Mines is limited in the number of students it can enroll. Mines simply is not large enough to supply the Colorado economy with superior minds. CU and CSU have fine reputations and are good schools, but they are not going to attract the best and the brightest.

The economy can support the new school, or rather it can support the economy. Other schools will not be hurt by it. And, finally, it will help bring thousands of well-educated, well-trained individuals to Colorado's workforce.

Scott Danieles

Con Establishment

Governor Bill Owens' plan to create the Colorado Institute of Technology may seem to be a great idea—if you're a hiring manager at a high-tech company. Who *wouldn't* want to siphon from the first-rate Colorado higher education system, diverting its resources and future vision directly into your personnel department?

Using their vast capital, companies like Qwest, Sun Microsystems, Level 3, Hitachi, and US West have already ponied up \$42 million towards fitting the Institute with high-tech equipment, much of which al-

ready exists at schools throughout Colorado.

Besides wasting infrastructure, the Institute is another example of public interests being subjugated to corporate ones. Giving the private sector access to educational curriculum is not a good idea. The formation of the Institute, a consortium of corporate and educational elite, will be a first step in that direction. Colorado universities, including Mines, are jumping on board en masse, giving ample proof that even higher education is vulnerable to the whim of the private sector.

A quarter-billion dollars is just the initial fundraising goal, a significant piece of the pie when it comes to funding state institutions. Grants, gifts, and research backing—the current ways that the private sector supports higher-education—apparently aren't buying enough influence for the corporate string-pullers.

Secretary of Technology Marc Holtzman calls CIT a "golden goose" for Colorado. The metaphor is remarkably apt: I do seem to remember that goose being stolen. Not bad for a bureaucrat.

Tim Newlin

Pro Legalization

Marijuana should be legalized. It is not a matter of morality, of "keeping America clean," or even of protecting our loved ones. It is of realism, of opening your eyes. Legalization can be argued for any illicit drug. But a number of these are very easily abused and the law will not change overnight. Marijuana has the widest use, the lowest effect on crime, the least habit forming, and is nearly impossible to overdose on, making it an ideal candidate for legalization.

In 1998 the Drug Enforcement Agency (DEA) reported teen marijuana use up almost 300 percent from 1992. The DEA increased their staff by nearly a thousand and their budget by 39% to 1.3 billion dollars over the same period. "Despite significant law enforcement successes in dismantling several major international trafficking organizations, international criminal groups continue to pose a significant threat to the welfare of the American people." The effect of the DEA's efforts was to force growers to move their operations inside and underground. In these indoor marijuana fields, fertilizers and plant growth hormones allow longer growing seasons, higher yields, and higher THC content per plant. Today we have a higher potency drug whose production is harder to detect and that has nearly tripled in use amongst children despite the efforts of the most powerful nation in the world.

If not through direct confrontation, the key to undermining these cartels is through their budget. Their markets depend upon the rarity and the difficulty in producing these drugs. If legalized, the availability would increase, breaking the cartels' monopolies, and *driving down its value*. If it is a cheap item, it isn't

worth stealing to pay for. It isn't worth killing for. In 1997, 19% of state prisoners, and 16% of federal inmates, said they committed their current offense to obtain money for drugs, an increase from 1991, when 17% of state and 10% of federal prisoners reported the same motive. In 1997, the Federal Bureau of Investigation reported 5.1% of the 15,289 homicides committed that year were drug related.

It isn't profitable enough to fund the cartels. If these drugs were legal and readily available, they could be sold commercially and therefore *subject to regulation*. The Food and Drug Administration could set regulations on the processing, packaging, and selling of these drugs. No more deaths due to amount of strychnine or Drain-O used to cut the product. Existing alcohol and cigarette laws could easily be extended to discourage underagers from buying drugs.

I do not like the idea of drug dealers in my town. I don't use them. But the fact of the matter is that they're already there. The DEA reports marijuana's availability as "readily available throughout all metropolitan, suburban, and rural areas of the continental United States." The solution is to recognize this fact and place controls on it. By definition, criminals do not follow the law, so how can we expect them to not sell illicit drugs? Only by facing this problem and placing it out in the open, making it something socially acceptable and not to be hidden can we hope to contain this demon.

Sources:

<http://www.ycn.library.ns.ca/addict/violence.htm>
<http://www.usdoj.gov/dea/>
<http://www.ojp.usdoj.gov/bjs/>

Zach Dezman

Cassia's Advice

Dear Cassia,
I'm friends with a really great guy. We've become pretty good friends in the last year or so, but I really want to try a relationship with this guy. I don't want to risk the friendship. What do you suggest? Would being direct be too much or should I just wait it out?

If a guy friend was looking to try something more than "just friends" with me, I would definitely hope he would straight out talk to me about it. But because you are asking about a guy, I thought I should consult some male friends of mine. The overwhelming consensus was the necessity to talk about your thoughts openly.

From what they said, you should get together sometime, preferably off campus for pri-

vacy. Bring up the subject and be as honest as you can.

Another option, which is much easier but may not lead to a clear cut answer is to simply be more flirtatious. He may flirt back showing interest, but it may also be more sport flirtation than anything. Unfortunately, flirting back doesn't always mean there are any desires other than to have some harmless fun.

As for risking the friendship, I wouldn't worry about that too much. If you two are good friends as you say, you may feel a little awkward if things don't turn out as you hope, but that will wear off and you can continue to be friends afterwards.

Good luck and hopefully he realizes what a catch you are!

Cassia Calleos
cassiacalleos@hotmail.com

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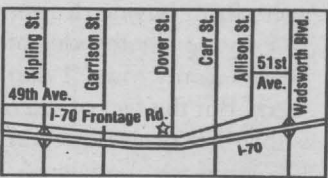
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Oredigger of the Week

Marty Jertson, Golf

Phoenix, AZ

Mountain Pointe High School

Sophomore



The Orediggers finished fourth out of eight schools at the Fort Hays State University Invitational on Monday and Tuesday, March 27th and 28th in Garden City, Kansas.

Sophomore Marty Jertson finished second overall (out of a field of 43), just one stroke off of the leader with a two-day stroke total of 143. On Monday, Jertson fired a 71, just one stroke back of Southern Colorado's Andrew Tapia, the eventual winner. Jertson and Tapia both shot 72 on Tuesday.

Tennis Having Hot Season

Judy Toel

After beating the Colorado College Tigers 9-0 last Thursday, the Mines Tennis team has acquired an impressive 9-1 record (1-0 conference), for the 2000 spring season.

"The whole team is just hot!" said head Coach Steve Wimberly.

Despite their one loss to College of the Desert (#1 junior college in country), Coach Wimberly feels that if they were to rematch, Mines would emerge with the win.

As for the rest of the season, the

conference championship is a very realistic goal for the team. They have already overcome a big hurdle (UNK), and hope to be undefeated in conference by tournament time.

"Metro and UCCS are the teams to beat this year. Metro handed us a loss in the fall, but we plan to surprise them on April 15th."

The next match for the team is in Pueblo on April 7th vs. Southern Colorado, and the next day they face UCCS at Colorado Springs.



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Coach Juliana Latest to Resign

Football Coaching Staff Being Restructured

Faisal Hashem and Loïc Wagner

Students consider fitness and physical wellness "essential to success in CSM's intense intellectual climate" said Dr. Theodore Bickart, CSM president in the 1999 Oredigger Football Media Guide.

"Intercollegiate athletic competition is a 110-year tradition at CSM." Bickart continued "Competition in sports -- whether for a team win or a personal best -- reinforces in our students-athletes the traits of leadership and enterprise found in professional practice..."

The football team's coaching staff is getting a make-over this year. Head Coach Wallace was replaced by Coach Bob Stitt, from Harvard, and Assistant Coach Haberkorn was replaced by Shawn Wiegel. The latest

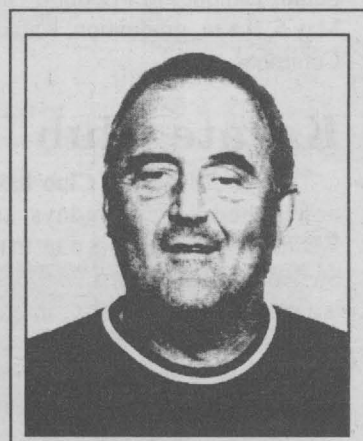
change in personnel came this past Friday, when Coach Juliana resigned. Having been scratched from the football team as the linebacker coach, Juliana was not about to spend his days in the PA classes here.

He therefore decided to look elsewhere for a suitable job, and will likely become the head coach of a Littleton high school.

After 26 years of coaching at the high school level, Juliana spent the last two years here at Mines as both an assistant coach on the football team and as a PA coach. But upper management felt the team's staff needed a makeover, as the team's record clearly indicated.

This makeover had been suggested by Juliana during the course of the year. He argued

to his superiors that the practices were poorly conducted, and that the organization was not stellar.



Coach Juliana

Several football players, who asked that their names be omitted, shared the same sentiments,

saying that the practices really didn't accomplish much and were not very efficient.

Overall, Juliana felt there was a lack of professionalism within the football program. Yet he was shunned by his superiors, and no change was made in the staff. As time passed by however, Juliana's predicted problems proved true, and the replacement of Wallace eventually took place.

However, the head of the athletics department felt more needed to be done. Only one of the seven coaches that started the season will be back next year.

But Juliana also had a lot of good things to say about the school and the students. Juliana enjoyed spending two years with the people in the athletic department, whom he described as

"very professional and real nice." He also expressed his content with the students he had in his PA classes. But Juliana will probably best remember the football players he worked with, saying they were easy and fun to work with, and he appreciated the effort and dedication they all put in the team.

Athletic director Marvin Kay believes that Mines athletes have potential. He adds "Let's look to the future now." Kay says that our new coaches are well qualified to turn our teams into more consistent winners.

"All in all, athletic pursuits both complement and supplement the challenging educational experience at CSM." Dr. Theodore Bickart, school president.

Mines Athletics Update

GOLF - The Orediggers finished fourth out of eight schools at the Fort Hays State University Invitational on Monday and Tuesday, March 27th and 28th in Garden City, Kansas.

Sophomore Marty Jertson finished second overall, just one stroke off of the leader, with a two-day score of 143.

On Monday, Jertson fired a 71, just one stroke back of Southern Colorado's Andrew Tapia (the eventual winner). Jertson and Tapia both shot 72 on Tuesday.

Freshman Ray Rodriguez finished 10th at 150 and sophomore Jack Sayers, one of Mines' four student-athletes with a perfect 4.000 cumulative GPA, finished 19th at 153.

The men also competed in Greeley and Ft. Collins this past Monday and Tuesday. Results were unavailable at press time.

MEN'S & WOMEN'S OUTDOOR TRACK & FIELD - On April 1st, Colorado Mines competed in the Ram Open at Colorado State University in Ft. Collins. Other

participating schools included Wyoming, Chadron State, Northern Colorado and Mesa State.

For the CSM men, Eric Stellmon took first in the 400 meter hurdles and second in the 110 meter high hurdles with a time of 14.86 seconds.

Previously this season, Stellmon qualified for Outdoor Nationals in the 400 hurdles with a time of 52.24. Jesus Salazar placed first in the triple jump with a leap of 44' - 8" and tied for second in the long jump with

a mark of 21' - 6".

Dayven Johnston finished second in the 400-meter dash with a time of 48.15 seconds. Johnston, who competed at the Indoor Nationals, has also qualified for Outdoor Nationals with a time of 47.90 in the 400. Even more, the men's 4 x 400-meter relay team of Johnston, Jim Beideman, Ben Lengerich and Derek Swanson took first place with a time of 3:16.53.

In the women's competition, Meg Schissler finished first in the 5,000 meter run with a time of

19:40.93 while high jumper Judy Toel placed third with a mark of 5' - 0".

This Saturday, the teams will compete at the Colorado College Invitational in Colorado Springs.

Contact:

Colorado Mines' Sports Information Director Jeff Duggan at 303-273-3095, call the CSM Sports Information Hotline at 303-273-3177 or visit the Mines Athletics' website at www.athletics.mines.edu



WANTED

HIGH GRADE & PROSPICETOR EDITORS

High Grade is the CSM Literary Magazine
and Prospetor is the Yearbook

Pick up applications in Student Activities

Miner Notes

CLASSIFIED ADS

ANTS!

Do you want a voice? ANTS, Association of Non-Traditional Students invites you to join our organization. For more information, contact sziegler4@earthlink.net, jquam@mines.edu, or csimmons@mines.edu (faculty advisor). Look forward to seeing you there!

APO

APO meets in Meyer Hall 357 on Wednesday at 7 p.m. For more information, contact Ian Nickerson at inickers@mines.edu.

Bridge Club

The bridge club meets Thursdays from 6-11 p.m. in the Coolbaugh atrium. Feel free to come for any portion of this time. Beginners are welcome. If you have any questions, please contact Jeff Brown (303-279-1410, or e-mail to jsbrown0@mines.edu) or Dan Stacy (720-371-1292, dstacy@mines.edu).

Board of Publications

If you have complaints regarding any of the three student publications at the Colorado School of Mines, please feel free to contact a member of the board of publications. You can email the chair at clanders@mines.edu or the ASCSM representative at wtrainor@mines.edu or call (303) 273-3784 and leave a message for Whitney Trainor.

Campus Crusade for Christ

All are welcome to join us, for our weekly 737 meeting. It is a place to hang out with friends and talk about life. Meetings are held every Thursday at 7:07 p.m. at First Baptist Church of Golden on the corner of 19th and Washington. Afterwards, we will be going to the Golden Grind for food and fellowship.

Catholic Newman Group

Anyone is welcome! A discussion group for contemporary issues. Every Tuesday at 8:30 p.m., 2nd floor of the Green Center in the Ted Adams Room. Please contact Matt at 303-271-0654 or mlengeri@mines.edu for more information.

Circle K

Come find out about the world's largest student run service organization. Meetings are held Tuesdays, 6 p.m. at the Student Center in room 236. For more information contact clapok@mines.edu.

Coolbaugh Memorial Award

An award of at least \$3,000 will be given to an undergraduate upperclassman. Requirements include that the student will graduate the year following the receipt of the award, high academic scholarship, and being active with the community. The committee selects a recipient from a list of deserving students furnished by the CSM financial aid office.

CSM Concert Choir

The CSM Choir is open to everyone!! Come sing jazz, classical, and contemporary pieces with us every Thursday from 4-6 p.m. in CO 209. Questions? Call Matt at 303-271-0654 or email mlengeri@mines.edu.

Earthworks

Meetings are held every Wednesday at noon in Alderson Hall 362. All are welcome! Come help us with plans for a campus Earth Day celebration.

FCA.

The Fellowship of Christian Athletes meets Wednesdays at 7:30 p.m. in the Projection Room on the second floor of Volk Gymnasium. All are welcome: Christians, athletes, both or neither. For more information email fbuckner@mines.edu.

FCC

Fellowship of Christian Cowboys (and girls), the 1996-97 New Club of the Year, meets weekly on Thursday at 6 p.m. For information, email derjacks@mines.edu or visit http://www.mines.edu/Stu_life/organ/fcc.

GLBE/Sigma Lambda

We've changed our name! Sigma Lambda (formerly Gay, Lesbian, Bisexual Engineers) meetings are held twice monthly with social events throughout the month. For more information contact glbe@mines.edu or visit our website at www.mines.edu/Stu_life/organ/glbe

Graduation

April 26, 4 p.m. graduation practice, Bunker Auditorium. April 28, check out forms due to the Dean of Students Office. May 4, 6 p.m. Senior Banquet in Friedhoff Hall. May 5, 9 a.m. graduation, Kafadar Commons.

Karate Club

CSM Karate Club has a new schedule! Mondays and Wednesdays from 6:30-8 p.m. in the Student Center Ballrooms. Karate is a tremendous way to stay in great physical shape, tune mental concentration skills and gain confidence about personal security. Spectators and new students are welcome anytime. For more information call Amir at 303-216-2183 or email achaghaj@mines.edu.

Kayak Club

Kayak Club holds pool sessions every Monday from 7:30-9:30 p.m. Everyone is welcome from beginners to advanced. Contact Jason at (303) 273-0507 or email jlegore@mines.edu.

Kendo Club

The CSM Kendo Club will meet Wednesday evenings, 7-9 p.m., in the Student Center ballrooms. Kendo is the ancient art of Japanese fencing that evolved from the life and practice of the Samurai warrior. New students and spectators are welcome any time. For more information call Sensei King at 303-795-9040 or email fourex@aol.com.

LDSSA

All students are invited to enjoy a guest speaker and lunch for \$1 at the Latter Day Saint Student Association's Friday Forum every Friday at noon at 1212 Arapahoe Street. Email meallen or grussell for more information.

Oredigger

Looking for crazy nights, wild women, mischevious men and free lunch? *The Oredigger* is looking for reporters and editors for next fall. No experience necessary. Meetings are Mondays at noon and lunch is provided.

Rugby

"GIVE BLOOD - PLAY RUGBY." No experience required - will train. Violent temperament and aggressive nature a plus. If you are interested in joining a winning team and meeting all kinds of crazy-ass people, e-mail tfoutz@mines.edu or call TY at 303-205-1155.

SCA

Fighter Practice: Tuesdays 7-9 p.m. in the Field House. Questions? Contact David at (303) 215-6243 or dclement@mines.edu.

Sober Drivers

Need a ride home on Friday or Saturday night between 9 p.m. and 3 a.m.? Call Kappa Sigma Sober Driver Program at 279-9951. You must be within 15 minutes of campus.

Society of Women Engineers

The next SWE meeting is on Wednesday at noon in Coolbaugh 209. For more info, email aama@mines.edu

Ultimate Frisbee Organization

Practices on Kafadar Commons every Tuesday and Wednesday at 4-5:30 p.m. All are welcome to come practice with us for competitive play against other schools. Official UFO CSM frisbees are available for \$8. For more information contact Steve at (303) 271-9972 or sgrigel@mines.edu.

Waterpolo

If you don't need water wings to stay afloat in the pool, come join us for practice on Tuesdays and Thursdays from 7:45 to 9:45 p.m. and Saturdays from 4 to 6 p.m. Waterpolo is great exercise and swim suit season is right around the corner. And guys, where else will you be able to see women in bathing suits in April in Colorado? See you at Volks Gymnasium.

Women's Ultimate Frisbee Team

Want to have fun, make friends, and get in shape? Come be a part of the Women's Ultimate Frisbee Team. No experience is required. Practice is on Kafadar Commons from 4-6 p.m. Thursdays. For more information call Julie West at 303-278-7431.

Bartending JOBS are in Demand. The fun jobs. Earn \$15-30/hr. Job placement assistance. Call Now!!! \$199 Back-to-School Special ends soon. Call 303-758-5000 or 1-800-BARTEND

For Sale. Unopened MS Office 2000 Professional only \$105. Call (303) 931-7468

For Sale. Specialized mtn bike \$125, Epson inkjet printer \$50, dinette table w/ 4 chairs \$50, Pioneer laser disk player \$25, CD rack \$5, 303-384-3995

House for Rent. Rooms Available with Common area: Upper Level: 1 Bedroom, \$400.00 per month, 25% of utilities. Lower Level: 2 Bedroom with office space, separate entrance, 25% of utilities, \$350 per month per bedroom, 2 blocks from CSM campus. Off street parking or garage. Huge yard with storage area. CSM STUDENTS ONLY. For more information please call CSM Foundation (303-273-3137).

Roommate Wanted. Older home in downtown Golden. No smokers or drinkers. Big fenced yard and satellite dish. \$500 includes utilities. Call 303-279-0888 and leave message.

Help Wanted. Be a counselor for a one week CSM summer camp. Camp dates are July 24 through July 28. The camp is for kids in the second through sixth grade. Earn some money and have fun. Pick up an application at the Minority Engineering Program House located at 1616 Maple Street.

Help Wanted. Mother's helper wanted. Very flexible part time. \$7/ hr and must drive. Very close to campus. Call Anne at 303 278-1639, or cell 303 517-6726.

Help Wanted. Attention summer school students, the Minority Engineering Program is hiring for their summer pre-collegiate programs. We need an academic coordinator, student teachers, resident assistants and tutors/homework graders for the SUMMET (July 5- July 30) and PREP-SUMMET (June 10-July 1) programs. Detailed job descriptions are available at the MEP house at 1616 Maple Street. Applicants must return a transcript, resume and applications by March 6.

Please submit all classified ads and Miner notes the Friday before publication. Email (oredig@mines.edu) submissions are preferred. Space is on a first-come first-served basis.